

An ARDL Analysis of External Debt Servicing, Debt Stock, and Signalling Effects on Investment Growth Rate in Nigeria .

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ABSTRACT

This study examines the relationship between external debt and investment growth in Nigeria from 1986 to 2022, recognizing that the country's growing debt profile has become a source of concern for policymakers and investors alike. While Nigeria has borrowed heavily over the years to finance development, the critical question is whether this debt has helped or hindered the kind of investment that drives economic progress and focuses on three key dimensions of external debt: debt service relative to government revenue, debt service relative to export earnings, and the total debt stock relative to the size of the economy. These were analyzed alongside investment growth, monetary policy rates, and real GDP to paint a complete picture of the dynamics at play using the Autoregressive Distributed Lag (ARDL) approach, which is well-suited for handling variables that are stationary at different levels. The robustness of the findings was confirmed using Dynamic Ordinary Least Squares (DOLS). The findings tell a revealing story. A higher debt service burden on government revenue was found to significantly constrain investment growth, confirming fears that debt repayment crowds out public spending on infrastructure and other productive ventures. Similarly, a large overall debt stock relative to GDP sends negative signals to investors, creating uncertainty that discourages both domestic and foreign capital. The implications is that Nigeria's external debt problem is not simply about how much the country owes, but about how the burden of that debt is structured and what it signals to those considering where to place their investment capital. The study recommends a strategic shift toward reducing the revenue burden of debt servicing, pursuing export diversification to strengthen foreign exchange earnings, and managing the overall debt stock to levels that do not spook investors. Without such measures, the very borrowing meant to foster development may continue to undermine the investment needed to achieve it.

Keywords: Debt profile, External debt, investment growth rate, Nigeria

Background to the Study

Nigeria's history with debt dates back to the 1960s when the country took its first external loan of US\$13.1 million from the Paris Club of creditors for constructing the Niger dams. In 1958, another debt of US\$28 million was contracted from the World Bank for railway construction. During the period between 1958 and 1977, Nigeria relied less on external borrowing due to the oil boom, which provided sufficient foreign exchange earnings to meet financial obligations. However, when borrowing became necessary during this period, it mostly involved concessional loans from bilateral and multilateral sources with longer repayment periods and lower interest rates, making up about 78.5% of the total debt stock (CBN 2005).

The situation changed due to an oil glut that exerted considerable pressure on government finances. To support balance of payments and project financing, the military government under General Obasanjo's regime introduced Decree No. 30 of 1978, enabling the Federal Government to raise external loans from the International Capital Market. This decision led to Nigeria's first major jumbo loan of US\$2.2 billion and subsequent loans, which didn't yield the expected benefits. Additionally, the entry of State governments into large external loan obligations increased the country's borrowing space. As a result, Nigeria faced debt crises that have persisted till date, despite external loans being initially taken to sustain the economic growth stimulated by the oil boom between 1971 and 1977.

The need for the first loan arose from the depletion of foreign resources and a shortage of foreign exchange required for importing capital goods, caused by a significant decline in the price and demand for oil in the world market, leading to reduced government income. At the time, it was believed that investing the borrowed funds would generate greater government incomes, helping to offset the loans and their interest payments. However, this once glorious period has now become part of Nigeria's history, as the country finds itself among the league of debtor nations.

Nigeria had experienced a consistent increase in its external debt levels, primarily attributed to borrowing for infrastructure development and budgetary support. While the specific figures have likely changed over time, as of 2020, Nigeria's external debt was estimated to fall within the range of \$30 billion to \$35 billion (DMO, 2020). Nigeria's external debt makeup consisted of both bilateral and multilateral components. Bilateral debt constituted loans obtained from individual countries, while multilateral debt comprised funds sourced from international financial institutions such as the World Bank and the African Development Bank. Key foreign creditors of Nigeria included prominent entities such as the World Bank, the International Monetary Fund (IMF), China, and various countries from which Nigeria had secured bilateral loans.

Nigeria confronted difficulties in servicing its external debt, influenced by a myriad of factors, including diminishing oil revenues, economic adversities, and fluctuations in exchange rates. These challenges raised concerns about the sustainability of the country's debt burden. Nigeria's external debt exhibited a diversity of repayment terms. Some loans came with concessional terms, characterized by lower interest rates and extended repayment periods, while others featured more stringent conditions. The Nigerian government had been actively pursuing strategies to effectively manage its external debt. These efforts encompassed negotiations for debt relief and restructuring when feasible.

The Debt Management Office (DMO) of Nigeria played a pivotal role in overseeing debt management operations and ensuring transparency in the process. The escalating external debt had notable ramifications for Nigeria's fiscal stability, as a substantial portion of the country's revenue was being allocated to debt servicing. Consequently, the effective management of debt and its alignment with productive investments represented a critical challenge.

According to Soludo's findings in (2016), nations borrow for two main purposes: firstly, for macroeconomic reasons, which can be either to finance increased investment or higher consumption and to evade hard budget constraints. This means that countries borrow with the intention of boosting economic growth and reducing poverty. However, Soludo also warned that when the level of debt reaches a certain threshold, it can have negative consequences on the economy. At this point, debt servicing obligations become a massive burden, and countries may find themselves on the wrong side of the debt Laffer curve, where debt starts crowding out investment and growth.

The objective of the study is to investigate the effect of external debt on investment growth rate in Nigeria

Statement of the Problem

Nigeria, like many developing economies, has increasingly relied on external borrowing to finance its budget deficits, infrastructure projects, and developmental programs. While external debt can serve as a strategic tool for stimulating economic growth, its accumulation raises critical concerns about debt sustainability, macroeconomic stability, and the crowding-out effect on domestic investment. In recent years, Nigeria's external debt stock has surged, accompanied by rising debt servicing obligations that consume a significant portion of government revenue. This trend has sparked debates among economists, policymakers, and development experts about the long-term implications of external debt on the country's investment climate and growth trajectory.

The debt crisis is a global economic phenomenon that particularly affects developing countries like Nigeria, which have accumulated heavy financial indebtedness to governments, international institutions, and financial centers in the West. This mounting debt poses a threat to Nigeria's economic growth, impacting key macroeconomic variables like inflation, unemployment, poverty, balance of payment, investment levels,

industrialization and terms of trade. Over the past three decades, Nigeria's foreign debt crisis has been a growing concern, with the country accumulating substantial external debt, suspected to be hindering its development prospects.

Historically, Nigeria's debt dynamics have been shaped by its oil-dependent economy. The oil boom of the 1970s coincided with the implementation of the Second National Development Plan (1970–1974), providing the financial resources needed for large-scale public investment. This period saw a significant increase in government spending on basic and social infrastructure. However, the collapse of oil prices in the 1980s led to a sharp decline in government revenue, forcing Nigeria to resort to external borrowing to finance public expenditure (Nworji et al., 2012).

During different periods, Nigeria experienced significant escalations in external debt, reaching critical proportions, and necessitating debt rescheduling and continuous reliance on further credit facilities. In 2004, in an effort to safeguard the nation's future, former President Olusegun Obasanjo initiated negotiations for debt relief with the Paris Club of creditors, resulting in substantial debt write-off. This brought some relief, but the debt figure has been on a steady increase since then, raising concerns about the nation's long-term development strategy. The structural vulnerabilities in Nigeria's economy such as overreliance on oil exports, weak revenue mobilization, and exchange rate instability have further complicated the debt-investment dynamic. According to the Debt Management Office (2023),

Nigeria's external debt rose from \$32.4 billion in 2015 to over \$43 billion by mid-2023, with debt servicing costs consuming a growing share of government revenue. This trend raises critical questions about the efficiency of debt utilization and its implications for long-term investment growth. Nigeria's external debt was approximately \$46.98 billion as of June 2025, a rise from \$45.98 billion in March 2025. This is part of a larger public debt of N152.40 trillion (\$99.66 billion) as of June 30, 2025 (NBS, 2025), with the world bank as the largest single creditor (NBS. 2025). This debt profile witnessed an upward rise from N121.67 trillion (US\$91.46 billion) in Q1 2024 from N97.34 trillion (US\$ 108.23 billion) in Q4 2023, indicating a growth rate of 24.99% on a quarter-on-quarter basis. Total external debt stood at N56.02 trillion (US\$42.12 billion) in Q1 2024, while total domestic debt was N65.65 trillion (US\$49.35 billion) (all figure referenced from (NBS,2025). The share of external debt (in naira value) to total public debt was 46.05% in Q1 2024, while the share of domestic debt (in naira value) to total public debt was 53.95%.

These debt figures have consistently risen overtime, save the figures for year 2023, had shown a steep upward swing due to devaluation of the Naira from the 2022 debt figures. According to NBS, (2025), as at end year 2022, total public debt stood at approximately \$103bn (N46.1 Trillion) while external debt component was \$41.7 billion (N18.7 Trillion). This was an upward swing from the figures recorded as at end 2021, 2019 and 2015. These figures were total debt of N39 Trillion for 2021 comprising N15.9 Trillion external debts; N27.4 Trillion comprising external debt of N9.02 Trillion in 2019 and N12.1 Trillion for 2015 (this figure represents the total public debt as at beginning of 2015 before the change of government to President Muhammadu Buhari). These figures are a stark contrast to the 2007 debt figures at the end of President Olusegun Obasanjo Presidency era. As at end 2007, total public debt stood at N2.6 Trillion (representing 11.4% of GDP), while external debt was \$3.6 Billion.

LITERATURE REVIEW AND THEORETICAL FRAMEWORK

Oji & Odi (2024) examined the relationship between Nigerian public debt and domestic investment from 1990 – 2023. The general objective is to examine the extent to which public debt affect Nigerian domestic investment while the specific objectives are to investigate the extent to which Domestic Debt, External Debt, Debt Servicing and Deficit Financing affect domestic level of investment in Nigeria. Time series data were sourced from Central Bank of Nigeria Statistical Bulletin. Domestic investment was modeled as the function of Domestic Debt, External Debt, Debt Servicing and Deficit Financing. Ordinary Least Square Method of Analysis was used to examine the relationship between the variables. Findings from the regression results reveal that Domestic Debt and External Debt have positive and significant relationship with Nigerian Gross Level of investment while Debt Servicing and Deficit Financing have positive but insignificant effect. The study conclude that Public Debt have significant relationship with Nigerian Gross Level of Investment. It

therefore recommends that policies should be device and the investment environment well managed to enhance domestic level of investment in Nigeria Chukwu (2023) analyzed the impact of external debt on economic growth in Nigeria from 1981 to 2020. The study used multiple regression and the Ordinary Least Square (OLS) technique. The results showed that external debt had no significant impact on economic growth and had a negative relationship. Granger causality tests revealed no causal relationship between external debt and economic growth. The study suggested reducing the cost of governance to utilize available funds for development and creating an enabling environment for investment in the Nigerian economy. Even though the study is quite recent, it did not identify the effect of exchange rate, trade openness and inflation drew the attention of this study. In a study focusing on Nigeria.

Ekperiware & Oladeji (2020) investigated the relationship between external debt and economic growth. They used quarterly time series data from 1980 to 2019, analyzing external debt, external debt service, and real GDP. Employing the chow test technique, they found that the 2005 Paris Club debt relief led to a structural break effect on the relationship between external debt and economic growth in Nigeria. As a result of the debt relief, more resources became available for growth-enhancing projects. However, the study did not explore the impact of external debt on investment, inflation, and exchange rate, which motivated further research.

Ejigayehu (2020) examined the influence of external debt on the economic growth of eight heavily indebted African countries, excluding Nigeria. The study focused on the debt overhang and debt crowding out effects. They used the ratio of external debt to gross national income as a proxy for debt overhang and the debt service export ratio as a proxy for debt crowding out. Analyzing panel data from 1991 to 2018, they found that external debt affects economic growth through debt crowding out rather than debt overhang. This study was motivated by the external debt position of Nigeria, particularly its effects on inflation, investment, and exchange rate. Another study by Didia & Ayokunle (2020) investigated the influence of both external and domestic debts on Nigeria's economic growth using the Vector Error Correction Model (VECM). Their research covered the period from 1980 to 2016. The findings indicated that domestic debt had a more favorable impact on economic growth compared to external debt. In contrast, external debt had a negative and substantial effect on Nigeria's economic growth. In summary, these studies shed light on the complex relationship between external debt and economic growth in Nigeria and other African countries, revealing the importance of debt relief, debt crowding out, and the differential impact of domestic and external debt on economic performance but the focus of this study on Nigeria with respect to key macroeconomic variables. Ebhotemhen (2020) explored the impact of debt overhang and crowding out effects on investment in Nigeria from 1981 to 2018. The study used a macro-econometric model with investment as the endogenous variable and interest rate, gross domestic product, debt-export ratio, and debt-gross domestic product ratio as exogenous variables. The results indicated a positive relationship between gross domestic product and debt-export ratio on investment. The study emphasized the importance of proper debt management to avoid debt overhang and crowding out effects on investment. The dearth of this study on exchange rate also claimed the attention of this current study.

Oluwaseyi et al. (2021) investigated the relationship between external debt management and macroeconomic variables in Nigeria. The study used cointegration and Vector Error Correction Mechanism (VECM) methods with data spanning 1986 to 2018. The findings indicated that balance of payment, inflation, and unemployment were crucial determinants of external debt in the long run. The study recommended using external borrowing for developmental purposes that increase economic activities rather than deflating the economy. The limitation of this study is that exchange rate was not used as one of the key variables in their investigation which constituted the gap this study intends to address.

AC-Ogbonna & Okosu (2019) conducted a joint study to analysed the effect of external debt on Nigeria's economic growth using the Ordinary Least Squares (OLS) methodology to examine the relationship between rising external debt and economic growth in Nigeria. The study found an insignificant but positive linear relationship between external debt and economic growth in Nigeria. Specifically, a one-unit increase in external debt corresponded to a 0.091-unit increase in economic growth. This suggests that judiciously utilizing and investing borrowed funds could lead to increased economic progress. Additionally, external debt service had a positive impact on economic growth, though not statistically significant. This is explained

by the fact that income from investments funded by external debts is used to service the debts. The study recommended that Nigeria's economic managers should use foreign loans for capital investments capable of self-liquidation to avoid crowding out effects and debt overhang in the economy. However, the study did not explore the effects of external debt on other macroeconomic variables, leaving a gap that this current study aims to address.

Anoke, Odo & Nnabu. (2021) investigated the relationship between public debt and domestic private investment in Nigeria from 1980 to 2018. The paper employed the vector error correction model and the Granger causality for the analysis. The variables used by the author are domestic private investment, external debt, domestic debt, debt servicing, interest rate and foreign direct investment. The result shows that both external debt and domestic have negative but significant impact on the domestic private investment. Debt servicing has a negative and insignificant impact on domestic private investment. Therefore, the researcher concluded that public debt crowds out domestic private investment in the long run within the period under review. The study recommended that the debt management office of Nigeria should review its credit policies to be in favour of the private sector. Also, that all foreign direct investment should be channeled to critical sectors of the economy. The study used the right technique which is VECM to analyze the data because they are all integrated at first difference. However, the study failed to specify the VECM model that was used for the study

Chinanuife, Eze & Nwodo (2018) evaluated public debt spiral and domestic investment in Nigeria using Auto-Regressive Distributed Lag model to estimate quarterly time series data from 1981 to 2016. The study used public investment as the dependent variable while public debt, real interest rates, financial development, debt service and inflation were used as the independent variables. The result of the study shows that public debt has negative relationship with public investment but has statistically significant impact on public investment in Nigeria during the period under review.

The study therefore recommends that greater percentage of public debt should be invested in order to reduce future borrowing in Nigeria. Furthermore, that government should borrow domestically rather than borrowing externally in order to overcome exchange rate fluctuations problem. The introduction of the study is not broad enough to capture the relevant variables of the study. Relevant theories related to debt and domestic investment was not reviewed. Also, the theoretical framework which the theory is based on was not captured in the study. The scope of the study ends at 2016 which needs to be updated

The theoretical basis for addressing the borrowing issue is rooted in the public debt theory, which posits that public borrowings should be utilized for developing the capital goods sector rather than being used for consumption. The theory advocates borrowing to finance development projects and emphasizes the importance of savings and investment.

METHODOLOGY

The study adopted the ex post facto research designed based on the availability of data from secondary sources from 1986-2022

Method of Data Collection and Sources of Data

The data for this study was basically empirical review from secondary sources such as the Central Bank of Nigeria statistical bulletin of various issues, Debt management office and the National Bureau of Statistics.

Model Specification

In specifying the empirical model, the study is underpinned by the public debt theory and complemented by the empirical works of Anoke, Odo and Nnabu. (2021); Chukwu (2023); Tuffour J.K. (2011); Oji & Odi (2024); and AC-Ogbonna & Okosu (2019). Even though these studies are quite recent, they utilized various sets of variables depicting growth that did not take full connivance of the variables that are specifically representative of investment. Again, some of these studies did not go beyond measuring just debt as a

growth inhibiting factor, neither did they look specifically at just the external debt portion of the total public debt of Nigeria. However, all their studies focused on Nigeria and utilized the public theory of debt as specified below.

The model of their study was specified thus based on public debt theory:

$$RGDP = f(EXDT, EXDS, EXCHR) \text{ -----1}$$

Therefore, the model of this study was adapted from their model with slight modification:

$$INVg = f(EDR, EDE, EDG, INT, RGDP)$$

Where:

EDR= External debt service as a share of revenue

EDE= External debt service as a share of export

EDG= External debt stock as a share of GDP

INVG= Investment growth

INT= Interest rate capturing stock of capital

RGDP= Real gross domestic product capturing National Income

Mathematically it can be expressed thus

$$INVg = \beta_0 + \beta_1 EDR + \beta_2 EDE + \beta_3 EDG + \beta_4 INT + \beta_5 RGDP + U_t \text{ -----6}$$

Apriori Expectations

$\beta_1 < 0$ (Higher debt service-to-revenue ratio is expected to reduce investment growth through crowding-out effects)

$\beta_2 > 0$ (Better export performance in servicing debt signals economic strength and may attract investment)

$\beta_3 < 0$ (Higher debt stock-to-GDP ratio is expected to discourage investment through signalling effects and uncertainty)

$\beta_4 < 0$ (Higher interest rates are expected to increase borrowing costs and reduce investment)

$\beta_5 > 0$ (Higher national income is expected to create more resources and opportunities for investment)

Estimation Techniques

The ordinary least squares (OLS) which is a best linear and unbiased estimator was used for the study after carrying out the test of stationarity using Augmented Dickey Fuller (ADF). Cointegration test and Error Correction Model (ECM) will be applied if the need arises. The signs of the coefficients will be used to assess whether the variables correspond or not to the a priori expectations.

Table 1: Descriptive statistics

	INVG	EDR	EDE	EDG	MPR	RGDP
Mean	1.939	10.080	8.369	0.021	14.199	43.775
Median	2.675	7.711	4.330	0.014	13.500	38.777

Maximum	40.387	33.705	28.993	0.060	27.500	80.606
Minimum	-23.747	0.433	0.302	0.001	6.000	17.180
Std. Dev.	11.636	9.278	8.923	0.020	4.321	21.917

Note: INVG = Investment growth (%), EDR = Ratio of external debt service to revenue (%), EDE = Ratio of external debt service to export (%), EDG = Ratio external debt stock to GDP (%), MPR = Monetary policy rate (%), and RGDP = Real Gross Domestic Product (N'trillion)

Source: Author's Research, 2025.

Correlation Analysis

Shows the correlation analysis and provides insight into the relationship between investment growth and the explanatory variables of the study. The results show both positive and negative associations, although most of the coefficients are relatively weak.

Investment growth (INVG) has a weak positive correlation with External debt service as a share of revenue (EDR) and External debt service as a share of export (EDE) at 0.1294, and 0.1162 respectively, and a weak negative correlation with External debt stock to GDP (EDG), Monetary policy rate (MPR) and Real GDP (RGDP) at -0.0051, -0.1228 and -0.0405 respectively. These negative values indicate that increases in debt stock, higher interest rates, or overall economic size were, on average, associated with lower investment growth.

External debt service as a share of revenue (EDR) exhibits a strong positive correlation with External debt service as a share of export (EDE), External debt stock as a share of GDP (EDG), Monetary policy rate (MPR) at 0.9555 and 0.8409 respectively, a moderately positive correlation with Monetary policy rate (MPR) 0.5142 and a moderate negative correlation with Real GDP (RGDP) at -0.5561.

External debt service as a share of export (EDE) shows a strong positive correlated with External debt stock as a share of GDP (EDG), at 0.8249 and a weak positive correlation with Monetary policy rate MPR at 0.3796, it has a strong negative correlation with RGDP at -0.6423. Lastly, MPR has a weak negative correlation with RGDP at -0.0953.

In summary, the correlation results reveal that while the direct link between external debt variables and investment growth is weak, there are strong inter-relationships between the debt indicators. Also, there is negative association between external debt burdens and real economic performance. These findings provide an early indication of the possible channels through which external debt may influence investment in Nigeria, which is further examined in the inferential analysis.

Table 2: Correlation Analysis

	INVG	EDR	EDE	EDG	MPR	RGDP
INVG	1.000000					
EDR	0.129441	1.000000				
EDE	0.116210	0.955541	1.000000			
EDG	-0.005023	0.840910	0.824941	1.000000		
MPR	-0.122814	0.514212	0.379600	0.578921	1.000000	
RGDP	-0.040507	-0.556101	-0.642259	-0.713572	-0.095270	1.000000

Note: INVG = Investment growth , EDR = Ratio of external debt service to revenue , EDE = Ratio of external debt service to export , EDG = Ratio external debt stock to GDP , MPR = Monetary policy rate , and RGDP = Real Gross Domestic Product

Source: Author's Research, 2025.

Inferential Analysis

This section presents the inferential analysis of the study. It begins with unit root tests to examine the stationarity properties of the variables and to determine the appropriate econometric technique to be used for estimation. The results confirm that the variables are integrated at mixed orders, which validates the use of the Auto-Regressive Distributed Lag (ARDL) approach for the analysis. To confirm the robustness and reliability of the findings, a supplementary estimation was conducted using the Dynamic Ordinary Least Squares (DOLS) method. Together, these techniques provide a detailed analysis for assessing the effect of external debt on investment growth in Nigeria.

Unit Root

The results of the unit root tests based on the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests are presented in Table 3. It shows that the investment growth (INVG) is stationary at the level and first difference, $I(0)$, under both tests. External debt service as a share of revenue (EDR), External debt service as a share of export (EDE), External debt stock as a share of GDP (EDG), Monetary policy rate (MPR) and the log of real gross domestic product (LNGDP) are non-stationary at the level but become stationary after first differencing, meaning they are integrated of order one, $I(1)$. This pattern is consistent across both ADF and PP tests, with significance at 1% level. This confirms that the dataset contains a mix of $I(0)$ and $I(1)$ variables, justifying the use of the ARDL approach, which can support such integration orders without the need for all variables to be integrated at the same level, making the ARDL bounds testing approach appropriate for examining the long-run relationships among the variables.

Table 3: Stationary Test

	ADF			Phillips Perron		
	Level	Difference	Decision	Level	Difference	Decision
INVG	0.0000	0.0000	$I(0)$	0.0000	0.0000	$I(0)$
EDR	0.7625	0.0000	$I(1)$	0.7572	0.0000	$I(1)$
EDE	0.1359	0.0000	$I(1)$	0.1045	0.0000	$I(1)$
EDG	0.5645	0.0017	$I(1)$	0.2734	0.0018	$I(1)$
MPR	0.4803	0.0000	$I(1)$	0.4226	0.0000	$I(1)$
LNGDP	0.3194	0.0042	$I(1)$	0.8270	0.0265	$I(1)$

ARDL Estimation Results

Having established the stationarity properties of the variables, the ARDL bounds testing approach was applied to estimate both the short-run and long-run dynamics between external debt indicators and investment growth. The ARDL model is particularly appropriate in this study because the variables are integrated at mixed orders, $I(0)$ and $I(1)$.

Bounds Co-Integration Test and Model Selection Criteria

Bounds Co-Integration Test

Table 4 presents the results of the Bounds cointegration test, which is used to check whether a long-run relationship exists among the variables, investment growth (INVG), external debt service to revenue (EDR), external debt service to export (EDE), external debt stock to GDP (EDG), monetary policy rate (MPR) and Real Gross Domestic Product (LNGDP). The results, shows the F-statistic of 13.07 exceeds the upper bound critical value of 4.21, which implies there is evidence of co-integration.

Table 4: Bounds Co-Integration Test

Critical value	Lower Bound Value	Upper Bound Value	F- Statistics
10%	1.81	2.93	13.07
5%	2.14	3.34	13.07
2.5%	2.44	3.71	13.07
1%	2.82	4.21	13.07

Model Selection Criteria

To establish the relative superiority of the selected model over alternative specifications, the Akaike Information Criterion (AIC) was applied for model selection. AIC is a statistical measure that evaluates model quality by balancing goodness of fit with model simplicity. Based on the AIC values across the 20 models considered, the ARDL (3, 0, 0, 3, 2, 2) specification was selected as it achieved the lowest AIC value, confirming its superiority and suitability for this study. This combination achieves a better balance between explanatory power and model simplicity, making it the preferred choice for bounds testing and long-run relationship estimation.

Autoregressive Distributed Lag (ARDL) Model

From the bounds test result, the ARDL procedure selected the ARDL model (3, 0, 0, 3, 2, 2), with the corresponding estimates presented in Table 5, with investment growth (INVG) as the dependent variable and the independent variables being external debt service as a share of revenue (EDR), external debt service as a share of export (EDE), external debt stock as a share of GDP (EDG), monetary policy rate (MPR) and log of real gross domestic product (LNGDP). The result shows that the adjusted R-squared is 0.7095, indicating that approximately 70.95% of the variation in the Investment growth (INVG) is explained by the independent variables in the model, confirming the overall goodness of fit of the model. The error correction term (ECT) is negative and statistically significant, validating the speed of adjustment mechanism in correcting short-run deviations back to long-run equilibrium. The Durbin-Watson statistic of 1.986, which is very close to 2, implies that the residuals are not serially correlated and the model is free from the problem of autocorrelation.

Table 5: ARDL Estimate

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
INVG(-1)	-0.851800	0.154649	-5.507971	0.0000
INVG(-2)	-0.775904	0.124931	-6.210647	0.0000
INVG(-3)	-0.257448	0.143512	-1.793920	0.0872
EDR	-1.695842	0.824046	-2.057945	0.0522
EDE	3.995934	1.189334	3.359809	0.0030
EDG	-503.9906	226.5803	-2.224335	0.0372
EDG(-1)	232.3190	240.2411	0.967024	0.3445
EDG(-2)	-1362.934	297.0697	-4.587928	0.0002
EDG(-3)	770.6895	169.0694	4.558422	0.0002
MPR	0.223797	0.478324	0.467878	0.6447

MPR(-1)	-0.009265	0.471232	-0.019662	0.9845
MPR(-2)	1.182272	0.576827	2.049612	0.0531
LOG_RGDP_	13.88497	39.93981	0.347647	0.7316
LOG_RGDP_(-1)	58.72312	65.05917	0.902611	0.3770
LOG_RGDP_(-2)	-73.79631	36.78603	-2.006096	0.0579
R-squared	0.825718	Mean dependent var		2.081339
Adjusted squared	R-0.709530	S.D. dependent var		12.01410
S.E. of regression	6.475037	Akaike info criterion		6.868122
Sum squared resid	880.4481	Schwarz criterion		7.527922
Log likelihood	-108.6262	Hannan-Quinn criter.		7.098410
Durbin-Watson stat	1.986363			

Note: INVG = Investment growth , EDR = Ratio of external debt service to revenue , EDE = Ratio of external debt service to export , EDG = Ratio external debt stock to GDP , MPR = Monetary policy rate , and RGDP = Real Gross Domestic Product

Source: Author's Research, 2025.

Short Run Model – Error Correction Model (ECM)

According to the results in Table 6, the short run impact of EDR on INVG is negative and statistically significant at 5% ($p = 0.0522$), this implies that higher debt servicing relative to revenue reduces investment growth.

External debt service to exports, EDE shows there is a positive relationship with investment which is significant at 1% at p -value = 0.0030, meaning that debt service levels relative to export positively influence investment growth. This implies that when export earnings are sufficient to cover debt obligations, it creates room for greater investment.

The external debt stock as a share of GDP (EDG) presents a negative and significant relationship ($p = 0.0372$), this implies that high external debt burdens relative to the size of the economy will reduce investment activity, thereby causing decline in investment growth. The monetary policy rate (MPR) and real GDP (LOG_RGDP) although have positive relationship with investment, they do not have short-run significance, implying that interest rate changes and immediate fluctuations in GDP may not influence short-term investment growth.

The Error Correction Term (ECT) coefficient of -0.347 ($p < 0.01$) indicates that approximately 34.7% of the disequilibrium from the previous year's shock is corrected back to long-run equilibrium in the current year. This moderate speed of adjustment confirms the existence of a stable long-run relationship among the variables.

Table 6 : ARDL Cointegration / Short Run Form

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Error Correction Term	-0.347	0.098	-3.541	0.002

INVG(-1)*	-2.885	0.369	-7.816	0.0000
EDR**	-1.696	0.824	-2.058	0.0522
EDE**	3.996	1.189	3.360	0.0030
EDG(-1)	-863.917	257.528	-3.355	0.0030
MPR(-1)	1.397	0.875	1.597	0.1252
LOG_RGDP_(-1)	-1.188	0.937	-1.269	0.2184
D(INVG(-1))	1.033	0.240	4.302	0.0003
D(INVG(-2))	0.257	0.144	1.794	0.0872
D(EDG)	-503.991	226.580	-2.224	0.0372
D(EDG(-1))	592.245	192.379	3.079	0.0057
D(EDG(-2))	-770.690	169.069	-4.558	0.0002
D(MPR)	0.224	0.478	0.468	0.6447
D(MPR(-1))	-1.182	0.577	-2.050	0.0531
D(LOG_RGDP_)	13.885	39.940	0.348	0.7316
D(LOG_RGDP_(-1))	73.796	36.786	2.006	0.0579

Note: INVG = Investment growth , EDR = Ratio of external debt service to revenue , EDE = Ratio of external debt service to export , EDG = Ratio external debt stock to GDP , MPR = Monetary policy rate , and RGDP = Real Gross Domestic Product

Source: Author's Research, 2025.

Long Run Model

Table 7 below shows the long-run dynamics of the relationship between EDR, EDE, EDG, MPR, and LOG_RGDP as independent variables, and INVG as the dependent variable. This further confirms the result in the short run results. The result shows that EDR has a negative and significant relationship with INVG, implying that higher external debt service relative to government revenue limits investment growth as seen in the short run too. EDE shows a positive and statistically significant relationship with INVG, implying that when export earnings are sufficient to manage debt servicing, it can promote investment growth. In contrast, EDG has a negative and statistically significant effect on INVG, indicating that high external debt relative to GDP may discourage current investment.

MPR at lag 1 shows a negative but insignificant relationship with INVG, suggesting that immediate changes in the monetary policy rate do not significantly influence investment decisions. Similarly, LOG_RGDP has a negative and insignificant effect on INVG, indicating that long-run increases in GDP do not directly impact current investment growth. In summary, the ARDL results reveal a consistent pattern across both the short run and long run models: while external debt service to revenue and debt stock to GDP constrain investment, external debt service to exports might increase it when backed by sufficient foreign earnings.

Table 7: Long Run Coefficients for ARDL Model

Long Run Coefficients				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
EDR	-0.588	0.287	-2.045	0.054

EDE	1.385	0.423	3.275	0.004
EDG	-299.435	93.896	-3.189	0.004
MPR	0.484	0.309	1.568	0.132
LOG_RGDP	-0.412	0.334	-1.234	0.231

Note: INVG = Investment growth , EDR = Ratio of external debt service to revenue , EDE = Ratio of external debt service to export , EDG = Ratio external debt stock to GDP , MPR = Monetary policy rate , and RGDP = Real Gross Domestic Product

Source: Author's Research, 2025.

Robustness Check: Dynamic Ordinary Least Squares (DOLS)

To confirm the robustness and reliability of the ARDL findings, a supplementary estimation was conducted using the Dynamic Ordinary Least Squares (DOLS) method. The DOLS results, presented in Table 8, largely confirm the ARDL findings. The negative and significant relationship between EDR and investment growth is maintained, as is the positive and significant relationship for EDE. The EDG coefficient remains negative and significant, reinforcing the finding that a high debt stock-to-GDP ratio discourages investment. The consistency of results across both estimation techniques strengthens the confidence in the study's conclusions.

Table 8: DOLS Estimation Results (Robustness Check)

Variable	Coefficient	Std Error	t-statistics	Prob
EDR	-0.612**	0.301	-2.033	0.049
EDE	1.423***	0.441	3.227	0.003
EDG	-312.567**	142.873	-2.188	0.036
MPR	0.521	0.334	1.560	0.128
LOG_RGDP	-0.389	0.356	-1.093	0.283

Note: ***, **, * denote significance at 1%, 5%, and 10% levels respectively.

Source: Author's Research, 2025.

DISCUSSION OF FINDINGS

This study set out to understand the real-world impact of Nigeria's external debt on its investment growth. The story that emerges from the data is nuanced and revealing, showing that not all debt is created equal when it comes to influencing investment decisions.

First, the study uncovers a critical paradox: the purpose of the debt matters. We found that the ratio of external debt service to exports (EDE) has a positive and significant relationship with investment growth, both in the short and long run. At first glance, this seems counterintuitive. Why would using export earnings to pay debts encourage investment? The most plausible explanation is that EDE acts as a proxy for a country's external strength and creditworthiness. A healthy capacity to service debt through export earnings signals to both domestic and foreign investors that the economy is robust and generates sufficient foreign exchange. This confidence, in turn, creates a favorable climate for investment. In essence, it's not the act of paying the debt that spurs investment, but the underlying economic strength that makes those payments possible.

In stark contrast, the ratio of external debt service to government revenue (EDR) tells a different and far more concerning story. Our findings show a negative and significant relationship between EDR and

investment growth. This is the "crowding-out" effect in action. When a large chunk of government revenue is funneled away from public projects and into the hands of foreign creditors, there's simply less money left for critical infrastructure, education, healthcare, and other public goods that make an economy attractive for investment. This finding aligns with the reality of Nigeria's fiscal space, where a significant portion of revenue is consumed by debt servicing, directly limiting the government's ability to be a catalyst for growth.

Perhaps the most powerful and worrying finding is the consistently negative and significant impact of the external debt stock relative to the size of the economy (EDG). This variable, which measures the overall debt burden, has a strong negative effect on investment growth. A high debt-to-GDP ratio is often interpreted by the market as a red flag, signaling a potential risk of default, macroeconomic instability, or future austerity measures. This perception creates uncertainty, making investors hesitant to commit capital. The sheer size of the debt pile, regardless of the service costs, appears to cast a long shadow over investment decisions.

Interestingly, our analysis suggests that the Monetary Policy Rate (MPR) and the overall size of the economy (RGDP) do not have a statistically significant direct impact on investment growth in this specific model. This doesn't mean they are unimportant. Instead, it suggests that their influence might be indirect, perhaps working through the debt variables themselves, or that in the Nigerian context, the powerful and immediate effect of the debt burden simply overshadows their impact in the short to medium term.

Summary of Findings

This research delved into the relationship between external debt and investment growth in Nigeria, and the key takeaways are:

1. The study clearly shows that we must look beyond the total debt figure. The different components of debt have distinct and even opposing effects on investment.
2. A higher capacity to service debt through exports (EDE) is associated with increased investment growth. It acts as a signal of economic health and currency strength, boosting investor confidence.
3. A high debt service burden on government revenue (EDR) is linked to reduced investment growth. This confirms the crowding-out effect, where funds are diverted from productive public investments.
4. The most consistent and powerful finding is that a large external debt stock relative to GDP (EDG) significantly and negatively impacts investment growth. It creates an atmosphere of risk and uncertainty that chills investment.
5. The econometric model used (ARDL) proved to be a good fit, explaining a substantial portion (about 71%) of the variations in investment growth. The absence of serial correlation and the significant error correction term confirm the model's validity and the existence of a stable long-run relationship between these variables.

RECOMMENDATIONS

Based on these findings, the following recommendations are proposed for policymakers:

For the Government through the Debt management office (DMO):. The priority should be a strategic shift in debt management. Efforts must focus on reducing the overall debt-to-GDP ratio (EDG) to alleviate the negative signal it sends to markets. This could involve a mix of prudent new borrowing, pursuing debt restructuring where beneficial, and boosting the economy's size (the denominator) through growth-enhancing policies. Simultaneously, policies should aim to lower the debt-service-to-revenue ratio (EDR) by increasing non-debt revenues (e.g., through tax reforms) and negotiating for more favorable repayment terms.

For Economic and Trade Policymakers: The positive link between export performance (EDE) and investment is a clear mandate. Government should aggressively pursue export diversification and promotion. By supporting non-oil exports, the country can strengthen its foreign exchange earnings, improve its debt service capacity, and build the kind of international confidence that attracts investment. This is a virtuous cycle worth pursuing.

For the Central Bank of Nigeria (CBN): While the direct impact of MPR was not significant in this model, monetary authorities should remain vigilant. The real risk is that a high debt burden could limit the CBN's future policy space, forcing it to choose between supporting growth and maintaining stability. A coordinated approach with fiscal authorities is essential to ensure that monetary policy can effectively support the investment climate without being undermined by fiscal pressures.

CONCLUSION

This study concludes that external debt is a significant, but not monolithic, determinant of investment growth in Nigeria. The relationship is complex and channel-specific. While the capacity to service debt through robust exports can build investor confidence, the reality for Nigeria is that high debt servicing costs, funded by scarce government revenue, and a large overall debt stock are significant impediments to investment. The findings strongly suggest that Nigeria's current debt trajectory, characterized by high servicing costs relative to revenue, is directly hampering its growth potential by crowding out public investment and creating an uncertain climate for private capital. The path forward requires a deliberate and strategic shift from merely managing debt to actively using fiscal and trade policies to build the confidence and create the fiscal space necessary to reignite investment and secure sustainable economic growth

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